

### **REMARKS/ARGUMENTS**

These remarks are made in response to the Final Office Action (Office Action) of June 2, 2006 (Office Action). As this response is timely filed within the three-month statutory period, no fee is believed due. However, should it be found that there are fees, please charge any deficiencies or credit any overpayment to Deposit Account No. 50-0951.

Claim 9 was rejected under 35 U.S.C. 101 for being directed to non-statutory subject matter. Claims 1-17 were rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,938,256 to Deng et. al. (hereinafter **Deng**), in view of U.S. Patent No. 6,195,676 to Spix et. al. (hereinafter **Spix**).

#### **I. Claim Rejections – 35 U.S.C. 101**

As already noted, the Office action states that claim 9 was rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. Furthermore, the Office Action specifically states at page 2: "Regarding claim 9, the system is a best a software system, per se, failing to be tangibly embodied or include any recited hardware as part of the system."

As of this amendment, claim 9 is now in form for allowance. However, based on the language of the Office Action, specifically its treatment of the system as a software system – that is, a computer program – Applicants believe additional explanation would expedite examination of this claim.

For a software or computer program to be patentable subject matter, it is required that the computer program must generate a "useful, concrete and tangible result." *Street Bank & Trust Co. v. Signature Financial Group Inc.*, 149 F. 3d 1368, 1373 (Fed. Cir. 1998). Although the Federal courts have not defined what is "useful, concrete and tangible result", the caselaw indicates that at the very minimum, the "result" should have some "real world" value. (See MPEP 2106, II.A).

The computer or software system disclosed in the present invention does have "real world" value. It is well known in the art that the workload that application servers receive varies greatly. (Specification, paragraph [0006]). Therefore, without proper monitoring, the application server can execute its functions poorly or even fail. (Specification, paragraph [0006]).

The "result" achieved in the present invention is the proper management and monitoring of the workload of the application server, resulting in increased performance and productivity of the application server and associated applications. The present invention achieves this result by implementing a system comprised of two components: the workload driver and the status driver. The workload driver, based on the available resources of the application server and/or reports from the status driver, manages the application server load, maintaining peak performance and productivity. The status driver, monitors the performance of the application server and reports back to the workload driver, allowing the workload driver to continuously adjust the workload of the application server. This system of interacting drivers results in increased productivity and improved performance of the application server.

As stated above, claim 9 has been amended to expedite examination and is believed to be in condition for allowance. Applicants respectfully request that the rejection of claim 9 be withdrawn.

## **II. Claim Rejections – 35 U.S.C. 103**

As already stated, the Office Action states that claims 1-17 were rejected under 35 U.S.C. 103 as being unpatentable over *Deng* in view of *Spix*. Specifically, the Office Action addresses claims 1-3 and rejects claims 4-17 on the same grounds. However Applicants respectfully submit that *Deng* and *Spix*, alone and in combination, fail to teach or suggest all the features of the present invention.

***Claim 1***

Paragraph 7 of the Office Action states:

*Regarding claim 1, Deng discloses a method for providing dynamic workload transition in an application server for e-business system, comprising:*

*receiving at least one work request that includes at least one workload task having an associated workload parameter specifying a resource requirement. (col 5, lines 57-67, fig. 1);*

Applicants submit that **Deng** discloses a system for balanced distribution of requests across multiple servers using dynamic metrics. The system includes a request table to collect at least two requests incoming with a predetermined time interval. A request examiner routine analyzes each collected request with respect to at least one attribute. A system status monitor collects resource capability information of each server in a resource table. An optimization and allocation process distributes collected requests in the request table across the multiple servers upon completion of said time interval based on an optimization of potential pairings of the requests in the request table with the servers in the resource table. One of the primary responsibilities of the examiner is to examine all incoming requests and to prioritize these requests based on criteria that can be described in general as (1) categorical criteria such as product searching, price, comparison, on-line shopping, web surfing, audio streaming and video downloads, and (2) demographic criteria such as the origin of the request and possible user profile.

Applicants submit that the process described by **Deng** fails to provide for dynamically changing the work to be performed on behalf of a client request. It simply categorizes the requests and distributes these requests to systems that have the appropriate resources to handle the work request. The present invention instead provides a means for an e-business application to dynamically change the work being done to "lighten" the workload being performed and help to bring the overall end-to-end application back to a state where it can perform appropriately. (See paragraph [0016]).

*determining a resource capacity of the e-business system in view of said resource requirement (col 2, lines 47-66, col 5, lines 57-67)*

The process described by **Deng** fails to provide a mechanism to examine the specific applications that are functioning on the servers in the environment. **Deng** teaches that "system" refers only to the resources of the hardware the application runs on. Accordingly, **Deng** simply collects basic system attributes of servers in the environment to determine the capacity of a given server. The present invention provides for a broader definition of "system", extending to not only the hardware, but the application itself. Therefore, the present invention provides for retrieval of status information from specific application systems as well as the overall servers in an e-business environment in order to determine whether a dynamic workload transition is an appropriate action.

*predicting an overload condition in view of said resource capacity for at least one system having priority in the e-business system for executing a portion of said workload task (col 2, lines 47-66, col 3, lines 53-60);*

The system described by **Deng** collects information on both the attributes of the requests and the resource capability of the servers to dynamically allocate the requests in a set to the appropriate servers. However, the resource capability described by **Deng** is only a physical system resource availability CPU/memory/network and not an application system availability. **Deng** fails to provide an ability to change the characteristics of the requests being made, but instead applies the request to different physical servers as determined to be appropriate by the request examiner. Therefore, **Deng** provides only a shift in workload from one server or resource to another. The present invention instead provides for a modification of the workload on a single server or resource. (See paragraphs [0025]-[0026]).

*causing a first reallocation of at least a portion of system resources allocated to a first set of workload tasks in the e-business system from said first set of workload tasks to a second set of workload tasks in response to predicting the overload condition (col 2, line 62 - col 3, line 4);*

**Deng** describes that the optimization and allocation process preferably analyzes metrics maintained in the request table and resource table as part of a relational database to allocate requests to servers based on a minimization of the metric distance between pairings of requests and servers and further describes the demand patterns formed. However, **Deng** fails to provide the ability to change the work request being made. Instead, the system of **Deng** offers to simply apply the request to different physical servers as determined to be appropriate by the request examiner. The present invention instead reduces available resources for a lower priority workload in order allow at least a portion if higher priority workloads to have needed resources or to transition all resources to the higher priority workload. (See paragraphs [0025]-[0026]).

*executing a query of at least a portion of said first set of workload tasks included in said workload request in response to said first reallocation (col 3, lines 14-16);*

**Deng** discloses the ability to respond to the demanding circumstances of requests being made by shifting from processing each request as an independent event to processing as a set of requests incoming within a predetermined time interval; i.e., the system of **Deng** will bundle requests from different users together to try to ensure high performance of the servers. Furthermore, **Deng** fails to disclose the ability to change the characteristics of the requests being made. Instead, **Deng** simply bundles these requests together and distributes these requests to different physical servers as determined to be appropriate by the request examiner. Instead of bundling different user requests together, the present invention examines the workload being requested and determines the

appropriate workload to be executed based on performance information provided by the application servers. (See paragraphs [0023]-[0024]).

*wherein the workload tasks are performed by a plurality of different applications under the direction of the e-business system (col 2, lines 45-47);*

*Deng did not clearly disclose the processing of second set of workload tasks requires less system resources than processing said first set of workload tasks and if said first set of workload tasks require processing after the overload condition subsequently abates, performing a second reallocation of system resources to said first set of workload tasks. Nevertheless, Spix discloses such teachings in col.30, lines 49-56 and col. 34, lines 29-44. Therefore it would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to incorporate Spix's teaching together with Deng to provide services to client according resource requirement and improve the capability of the resource allocation scheme to be more adaptive and dynamic from all operating aspects (Deng: col 2, lines 35-42).*

*Spix* discloses integrated software approaches for highly parallel multiprocessor systems having multiple tightly-coupled processors that share a common memory. *Spix* does not address application workloads to be performed on multiple systems. Instead, *Spix* deals with effectively controlling execution of programs on a highly parallel multiprocessor system with limited shared resources. The references to *Spix* cited in the Office Action, Col 30 lines 49-56 and Col 34, lines 29-44, deal only with in-line memory swapping and resource management and scheduling to optimize usage of a multiprocessor cluster, respectively, not to optimize application workload requests and not to effectively create workloads and alternative workloads, as disclosed in the present application.

Additionally, Applicants respectfully submit that one skilled in the art would not be motivated to apply the teachings of *Spix* together with those of *Deng* to create the concept of workloads and alternate workloads. *Deng* describes a system which collects information on both the attributes of the requests and the resource capability of the

servers to dynamically allocate the requests in a set to the appropriate servers. The resource capability described by **Deng** is a physical system resource availability CPU/memory/network and not an application system availability. **Deng** fails to describe the ability to change the characteristics of the requests being made but to simply apply the request to different physical servers as determined to be appropriate by the request examiner. Applicants respectfully submit, therefore, that **Deng** and **Spix**, separately or in combination, fail to teach or suggest all the features of claim 1.

**Claim 2**

The Office Action states in Paragraph 8:

*Regarding claim 2, as modified Deng discloses the detecting step further comprises Receiving said workload request in a text format for providing visualization of resource requirement (Deng: col 3, lines 49-61);*

**Deng** describes receiving requests and determining attributes of requests. However, **Deng** fails to describe the concept of a workload request consisting of multiple application tasks to be performed on a variety of different back-end systems. The present invention utilizes an XML based "workload" as a set of business tasks to be operated on in sequence. (See paragraph [0005]).

*monitoring system parameters in the e-business system (Deng col 3, line 62 - col 4, line 2);  
analyzing said monitored system parameters to predict when said overload condition occurs in the e-business system (Deng col 3, line 62 - col 4 line 2);*

**Deng** describes a system for characterizing site-specific traffic via demand patterns. The present invention instead relies on application performance as well as system performance. The invention provides the mechanism for the application system to examine performance characteristics and therefore determine appropriate workloads to be executed. (See paragraph [0024]-[0025]).

**Deng** requires that demands be predictable to ensure the operation of the system. The present invention does not rely on patterns but instead provides a mechanism for the application system to dynamically obtain performance information and react appropriately when an unexpected event occurs. (See paragraph [0006]).

### **Claim 3**

The Office Action States in Paragraph 3:

*Regarding claim 3, as modified Deng discloses the text format of monitoring system parameters comprising CPU utilization, disk I/O and memory utilization (Col 6, lines 34-55). As modified Deng did not specifically disclose the text format is an XML presentation. Nevertheless, the limitation narrowed by the claim is considered obvious and further more a matter of design choice, since application has not disclosed that the claimed limitation solve any stated problem or are for any particular purpose and it appears that the invention work perform equally well without the claimed feature. Therefore, it would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to utilize the system status as disclosed from modified Deng's to determine system capacities and capabilities as needed.*

Since claim 3 is a dependent claim, by reference it includes all the limitations of claim 1 and claim 2. Therefore, Applicants respectfully submit that, based on arguments presented above, claim 3 is in form for allowance.

### **Claims 4-17**

In paragraph 10, the Office Action states that claims 4-17 are rejected on the same grounds as claims 1-3, stating that all features of each claim are disclosed by Deng in view of Spix. Based on the arguments presented above with respect to claims 1-3, Applicants respectfully submit that **Deng** and **Spix**, either separately or in combination, fail to teach or suggest all the features of claims 4-17.



**CONCLUSION**

Applicants believe that this application is now in full condition for allowance, which action is respectfully requested. Applicants request that the Examiner call the undersigned if clarification is needed on any matter within this Amendment, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,

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